

**THE EMBODIMENTS OF THE INVENTION IN WHICH AN EXCLUSIVE PROPERTY OR PRIVILEGE IS CLAIMED ARE DEFINED AS FOLLOWS:**

1. A method of transmitting data over a fibre-optic channel, said data comprising multi-valued bits each having one of at least three possible values, said method comprising:
  - a) establishing a respective optical characteristic corresponding to each of said possible values;
  - b) for each multi-valued bit of said data, transmitting a pulse having the optical characteristic corresponding to the value of said multi-valued bit.
2. A method according to claim 1, wherein said optical characteristic comprises wavelength.
3. A method according to claim 2, wherein said optical characteristic further comprises amplitude modification.
4. A method according to claim 1, wherein said optical characteristic comprises polarization.
5. A method according to claim 2, wherein said optical characteristic further comprises amplitude modification.
6. A method according to claim 1, wherein said optical characteristic comprises phase angle.
7. A method according to claim 2, wherein said optical characteristic further comprises amplitude modification.
8. An optical encoder for transmitting data over a fibre-optic channel, said data comprising multi-valued bits each having at least three possible values, said optical encoder comprising:
  - a) a control;
  - b) a laser driver operated by said control, and providing a mode corresponding to each of said possible values;
  - c) at least one laser connected to said laser driver; and
  - d) an optical multiplexer connected to each of said laser driver;

said control being configured to receive said data, process each multi-valued bit thereof, and operate said laser driver in the mode corresponding to each multi-valued bit of the data and thereby transmit said data.

9. An optical encoder according to claim 8, wherein said at least one laser comprises a laser for each mode, and said laser driver operates in a respective mode by powering the laser corresponding to the respective mode.
10. An optical encoder according to claim 8, wherein said at least one laser provides a wavelength corresponding to each mode, and said laser driver operates in a respective mode by operating the laser at the corresponding wavelength.
11. An optical encoder according to claim 8, further comprising:
  - a) a plurality of filters coupled to said laser, each of said filters corresponding to a respective mode;
  - b) a plurality of electronic switches each corresponding to a respective one of the filters; and
  - c) an optical multiplexer coupled to the switches;said laser driver operating in a respective mode by operating the switch corresponding to the respective mode to provide a signal corresponding to the respective filter to said optical multiplexer.